

## NOTES.

PARTICULARS respecting the Government competition for the construction of aeroplanes and seaplanes on the lines of increased safety, to which allusion was made in NATURE of August 21, have now been published, and are obtainable from the Air Ministry. The following prizes are offered:—For aeroplanes of small type: First prize, 10,000*l.*; second prize, 4000*l.*; and third prize, 2000*l.* For large-type aeroplanes: First prize, 20,000*l.*; second prize, 8000*l.*; and third prize, 4000*l.* For seaplanes: First prize, 10,000*l.*; second prize, 4000*l.*; and third prize, 2000*l.* The latest date for entries is December 31 next. Sir H. H. Shephard has instituted a memorial to his son, the late Brig.-Gen. G. S. Shephard, in the shape of prizes for members of the Royal Air Force for essays relating to aviation. This year the prizes are to be awarded for essays on "Sea and Fleet Reconnaissance" and "Aerial Navigation and Pilotage." The administration of the annual competitions is to be carried out by the Air Council.

AN International Exhibition of Aeronautics is to be held in Paris from December 19 to January 4 next. There will be eleven groups of exhibits as follow:—Aerostatics; heavier-than-air apparatus; motors and propellers; sciences; art; structural materials; transport and shelters; cartography and bibliography; commerce; motor navigation; and various industries.

THE annual general meeting of the Institution of Mining Engineers will be held at the University, Birmingham, on September 10–12, when the following papers will be read, or taken as read:—"Report of the Committee on the Control of Atmospheric Conditions in Hot and Deep Mines"; "Training of Officers and Men of the Tunnelling Companies of the Royal Engineers in Mine-rescue Work on Active Service in France," G. F. F. Eagar; "A New Method of Working Thick Seams of Coal at Baggeridge Colliery," D. S. Newey; "Protractors," T. G. Bocking; and "Magnetic Meridian Observations: A Method of Utilising the Kew Observatory Records," T. G. Bocking. The following papers will be open for discussion:—"The Difficulties and Dangers of Mine-rescue Work on the Western Front, and Mining Operations carried out by Men wearing Rescue-apparatus," Lt.-Col. D. Dale Logan; "Accidents due to Structural Defects of Apparatus or Injury to Apparatus, and the Future of the Proto Apparatus," Lt.-Col. D. Dale Logan; "The Examination of Coal in Relation to Coal-washing," M. W. Blyth and L. T. O'Shea; and "The Education of Colliery Managers for Administrative and Social Responsibilities," W. Maurice.

THE seventh congress of the Spanish Association for the Advancement of the Sciences is to be held at Bilbao on September 7–12.

A SUMMER meeting of the Royal English Arboricultural Society is to be held at Bournemouth on September 16–18.

WE learn from the *Museums Journal* that it is proposed by the British Cotton Industry Research Association, Manchester, to establish a Cotton Industries Museum, having for its object the illustration of the production of cotton and its utilisation in industry.

WE much regret to have to announce the death on August 23, in his eighty-fifth year, of Dr. A. G. Vernon Harcourt, F.R.S., lately Lee's reader in chemistry at Christ Church, Oxford.

NO. 2600, VOL. 103]

WE announce with regret the death on August 20, in his fiftieth year, of Dr. L. W. King, assistant keeper of Egyptian and Assyrian antiquities in the British Museum, and professor of Assyrian and Babylonian archæology in the University of London.

By the death at the age of sixty-five of Sir W. H. St. John Hope has been lost one of the greatest authorities on British archæology the present generation has known. When in 1885 he was appointed assistant secretary of the Society of Antiquaries, a post which he held for twenty-five years, his life-work as an archæologist began. Soon after leaving Cambridge Sir W. St. John Hope took up the study of ecclesiastical architecture, monumental brasses, and heraldry, and he communicated numerous papers on these subjects to *Archæologia*, the *Archæological Journal*, and the Proceedings of local societies. His monograph on Fountains Abbey and those on the cathedral church and monastic buildings of Rochester are noteworthy examples of research and exposition. His chief work, however, was the description of Windsor Castle, undertaken under royal patronage, which was published in 1912. He was closely associated with the leading archæologists of his time, to whom his loss is irreparable, and he leaves no successor so well equipped in many fields of learning.

THE gold medal of the Hyderabad Archæological Society, which was instituted as a memorial to Sir A. Fleetwood Pinhey, the founder and first president of the society, has been awarded to Mr. H. Cousens for his work, "Bijapur and its Architectural Remains."

ACCORDING to *Science*, Mr. D. B. MacMillan, the leader of the Crocker Land Expedition, is to leave next summer on an exploring expedition to the Arctic regions, and will be provided with a small schooner, to be named the *Bowdoin*, with auxiliary power, built to withstand the pressure of ice-floes. The expedition party will probably number ten, and be absent for two or three years, engaged in work for the National Geographic Society.

AN expedition to Africa under the auspices of the Smithsonian Institution is in progress. Its main object is to supplement the collections of African animals and plants and ethnographical specimens already possessed by the U.S. National Museum, particularly the collections made by Col. Roosevelt. Although the museum has considerable collections from various parts of the West Coast of Africa, it is very deficient in specimens from the interior and South Africa, and these it is hoped to supply by the present expedition, which is under the leadership of Mr. E. Heller, and will be abroad for at least a year. It is proposed to utilise the kinematograph for taking pictures of the animals and primitive peoples met with.

THE report for 1918 on experiments on animals in Great Britain and Ireland has just been published (price 2*d.*). There is a marked increase over 1917 in the total number of experiments; this increase is due partly to the great development of Army hospitals and Army laboratories, and partly to the ever-growing demand that the whole study of national health and efficiency shall be advanced and maintained by all the resources of science. Twenty-three new places, mostly for Army work or for municipal work, were registered in 1918; and eight places, having served their purpose, were removed from the register. The vast majority of the experiments were inoculations, or of that class of experiments, made on behalf of Government.

Departments and public health authorities, and for the preparation, testing, and standardising of sera, vaccines, and drugs. Much of this bacteriological and pharmaceutical work has been done by women; there was great need of their help, so many of the men being away on active service. In the administration of the Act relating to experiments on animals (39 & 40 Vic. c. 77) the Home Secretary is assisted by a permanent advisory body—Lord Moulton, Sir Anthony Bowlby, Sir John Rose Bradford, Sir Horatio Donkin, Sir Alfred Pearce Gould, Sir Seymour Sharkey, and Sir Charters Symonds.

A BRITISH munition dump exploded near Bailleul on August 8, causing the destruction of the recently built part of the town, and being, perhaps, responsible for the series of air-waves the effects of which were widely observed in the south-east of England on that day. Mr. R. B. Marston, writing to us from 160 Denmark Hill, S.E., noticed a sudden and prolonged shaking of an open window at about 1.10 p.m. G.M.T., followed after a minute or two by another and less pronounced shaking. At Caterham windows were shaken shortly after 1 p.m. At Norwich unfastened windows rattled violently at 1.10, 1.11½, 1.12, 1.12½, and again at 7.5 p.m.; and similar effects were observed at Wymondham, Attleborough, and other places in the neighbourhood. Bailleul is 11 miles south-west of Ypres, and about 135 miles from London and 140 miles from Norwich.

In the *Museum Journal* (vol. ix., Nos. 3-4) for September-December, 1918, Mr. Theodoor De Booy gives an interesting account of explorations in Venezuela. He shows that the tribes known as Tucucus, Irapenos, Pariris, Macoas, Rio Negro and Rio Yasa Indians all belong to the great Motilone family, deriving their names from the rivers to the south of Machiques, the head-waters of which they frequent. Up to the present little has been known of the Motilones, who are to this day regarded with great dread by the Venezuelans, who are unwilling to penetrate into their forest retreats. Their nomadic habits are due to the fact that they are constantly at war with neighbouring tribes, but they received Mr. De Booy with great hospitality. They differ from the majority of South American aborigines in possessing a strong sense of humour, and they have attained a higher standard of culture than might have been expected, as is shown by his full account of their customs, arts, and industries.

DR. A. M. MEERWARTH, assistant curator of the Ethnographical Museum, Petrograd, has compiled for the Government of India a useful guide-book to the collections in the Indian Museum, Calcutta, of objects collected from the Andamanese, Nicobarese, and hill tribes of Assam. Though the museum contains much valuable material, this was collected only in a casual way, and there are many gaps in the series of the Mishmis, Manipuris, and Kukis, while those of the Nicobarese, Abor, Mikir, Khasi, and Garo are far from complete. It is a matter of regret that in the course of the Ethnographical Survey now in progress arrangements were not made to supplement the monographs by a representative collection of illustrative objects. Dr. Meerwarth gives lists of desiderata under the catalogue of each tribe, and now that attention has been directed to the matter the Indian Government should take active measures, before it is too late, to fill up the gaps in the museum collections.

DR. H. J. HANSEN has published, in *Monograph xxxviii.* (June, 1919) of the *Siboga* Expedition, a systematic account, with analytical keys to the species, of the rich collection made during the expedi-

tion of Decapod Crustacea belonging to the family Sergestidae. Four genera are represented—*Sergestes* by eight species (three of which are new), *Sicyonella* by two species (one new), *Acetes*, and *Lucifer*. In his account of the hitherto imperfectly known genus *Acetes*, seven new species of which are described, the author has included descriptions and figures of other examples, chiefly from Indo-Chinese seas, not collected by the expedition. The *Siboga* gathered enormous quantities of sub-adult and adult specimens of the genus *Lucifer*, so that with these and the good collection at his disposal in the Zoological Museum in Copenhagen, the author has had ample material on which to carry out a revision of the genus. He concludes that of the twelve species previously described only three can be accepted as valid. Details of these three and descriptions of three new species are given.

It is well known that the various species of *Euglena* are very sensitive to external influences, such as light, gravity, oxygen, and a supply of organic food material. *Euglena deses* is a sluggish form which is often found on the surface of mud containing a large percentage of organic matter, and Miss Rose Bracher has given in the *Annals of Botany* for January last, an excerpt from which has just been received, an account of the behaviour of this organism as it occurs on the mud along the banks of the River Avon within its tidal region. The *Euglenæ* are visible on the surface of the mud during the daytime as green patches, but they burrow under the surface during the night, or when placed at any time in the darkness. When covered by the tide they also disappear, but reappear again when the tide goes down if the light is strong enough. This tidal periodicity persists even when the organisms are removed from the tidal influence, for it was found that when placed in a dish in the laboratory they still continued to burrow into the mud at the time of high tide, and this power of response was maintained under these conditions for about three days.

THE Medical Research Committee has issued a report (Special Report Series, No. 34) by Dr. H. M. Vernon, with contributions from Dr. W. C. Sullivan, Capt. M. Greenwood, and N. B. Dreyer, on the influence of alcohol on manual work and neuromuscular co-ordination. Accuracy and speed in type-writing and in using an adding machine, and accuracy in hitting spots on a target, were used as tests, and both pure alcohol and alcohol in the form of wine and spirit were employed. There was no distinct difference between the two forms of alcohol, and when very dilute (5 per cent.) the effect was about three-fourths as great as when taken strong (37-40 per cent.) for the same amount of alcohol. Alcohol produced some effect in all individuals tested. The degree of effect depended largely on whether the alcohol was taken on an empty stomach or with food; on an average it was twice as toxic under the former condition. In the foodless experiments two subjects respectively made 88 per cent. and 156 per cent. more mistakes after consuming claret (19.4 c.c. of alcohol) and sherry (22 c.c. of alcohol). In the same subjects a similar amount of alcoholic liquid, taken with food, produced no measurable effect, but when the amount was increased to 35 c.c. of alcohol and more, deterioration in results obtained with the tests became apparent.

A STRONG plea for the establishment of a national institute of industrial biology was put forward by Mr. A. Chaston Chapman at a recent conference held under the auspices of the Society of Chemical Industry. There is very inadequate provision made in this country for systematic instruction in industrial

microbiology and for the study of the innumerable problems on which it bears. The first object of such an institute would be to provide for the systematic prosecution of research in connection with any industry in which micro-organisms or enzymes play an important part. Such industries—not to mention brewing and distilling—are, for example, the dairy industry, particularly cheese-making; the bread-making and pressed-yeast industry; tanning; lactic acid making; the treatment of sewage; wine- and vinegar-making, and agriculture generally. Another function would be the specialised training of teachers of microbiology and biochemistry, and the practical instruction of technical employees. A further object would be the provision of organisms in pure culture for use in industry and the housing of as complete a collection of technical micro-organisms as could be got together. No such collection exists in the United Kingdom; scientific and other workers in want of a particular organism are compelled to apply to their friends on the chance that someone may happen to have a specimen, or else must send abroad for it. Whilst much valuable work in microbiology is done in this country, the institutions are scattered and there is lack of co-ordination. Far better results would be obtained if the many closely related problems connected with the activity of micro-organisms and enzymes could be studied in a single institution, adequately provided with all the necessary appliances and specimens, where the various workers would have the opportunity of discussing their problems with one another.

In a paper on the growth of crystals under controlled conditions (Journ. Washington Acad. Sci., vol. ix., p. 85, 1919), Mr. J. C. Hostetter shows how the faces developed on a crystal may result from a cessation of growth, incipient solution, and then renewed deposition of crystalline material. An octahedral crystal of alum may thus have its edges rounded by solution, and planes of the rhombic dodecahedron appear in place of these edges during renewed growth. These planes maintain themselves, and the original edge never becomes restored.

A COMMITTEE appointed by the council of the Institution of Electrical Engineers to consider the question of patent law amendment has recently presented a report to that body containing the outline of a scheme relating to a proposed Empire patent law; the intention of the scheme is that inventors shall, by means of a single application, be put in a position to secure a patent which shall possess validity in as many parts of the Empire, where patent protection receives recognition, as they may select in each particular case. Adhesion to this scheme should, it is suggested, be left optional to the various parts of the Empire, as also the decision on the question whether changes shall immediately be made in the existing patent laws having force therein. The undesirability of there being two classes of patents in force simultaneously in the same region is appreciated in the report, and it is, in consequence, suggested that the local Act or Ordinance, which it would be necessary to pass to give validity to the Empire patents in any particular region, should provide for such patents being treated in every respect as though they had been granted under the territorial patent law. It is proposed that the Empire patents should, in the first place, be issued in the same way as an English patent, the examination being made at, and the grant sealed in, the Patent Office in London. However, thereafter the Empire patents should, it is suggested, be assimilated with the domestic patents severally in each part of the Empire covered by the grant, questions of validity, infringement, revocation, etc., in relation

thereto being dealt with and determined under the local patent laws. It is further recommended that the Empire patents should rest in each region on their own foundation—that is to say, any judgment given in an infringement or revocation action or like proceedings in the United Kingdom, or in any Dominion, etc., should alone operate in that part of the Empire in which the legal proceedings were taken giving rise to such judgment, and should in no way affect the patent in any other part of the Empire to which the grant extended.

READERS interested in the decimal system of weights and measures will remember that, in addition to his pioneer work in steam engineering, James Watt has another claim to the gratitude of posterity in having originated, towards the close of the eighteenth century, that demand for decimalisation and for co-ordination between the units of measure and weight which led in a few years to the conception of the metric system.

*Symons's Meteorological Magazine* for July shows the exceptionally dry character of the weather over England during the early part of June, and it was not until June 19 or 20 that the prevailing drought was brought to an end. In London the partial drought, which had lasted seven weeks, broke up on June 19, and was followed by cool and showery weather. The map giving the Thames Valley rainfall for June shows that the driest weather occurred in Hampshire and Sussex in the south, and in the central Midlands, where the total rainfall for the month was less than 1 in. At Tenterden, in Kent, the rain measurement was only 0.47 in., and at Hailsham 0.48 in. The August issue of the magazine gives an account of the transfer of the British Rainfall Organisation to the Meteorological Office. The rainfall work will, however, still be carried on at Camden Square by Mr. Salter, who, acting under the Meteorological Office, will be superintendent in charge of the rainfall work. As stated in *NATURE* of July 24 (p. 409), Dr. H. R. Mill has retired from the directorship of the British Rainfall Organisation and from the editorship of *Symons's Meteorological Magazine*. The Thames Valley rainfall map for July shows that the rainfall over the area was smallest in parts of Berkshire and Hampshire, where the total measurement for the month was less than 1.5 in.

THE *Monthly Meteorological Chart of East Indian Seas* for September contains, as usual, the winds and ocean currents and other meteorological information for the guidance of seamen, which are now of great value for airmen. At the back a chart is given showing the drift of ocean current-papers, issued under the authority of Mr. H. A. Hunt, Commonwealth Meteorologist. The tracks followed by the several bottle-papers are entered on the chart, and some details of each current-paper are given in a tabular form. Fifty bottle-papers are thus dealt with during the years 1908-14, and they show a general drift to the north-eastward from the Southern Indian Ocean towards South Australia and New Zealand. A current is also shown from Western Australia to North-East Africa. These drifts give the resultant direction in the special cases dealt with, but the rate of flow is, for various reasons, untrustworthy. The current-papers secured are only a small fraction of those thrown overboard. To obtain the fifty drifts, without doubt many hundreds of bottles would have been thrown overboard. Some captains make it a system to throw overboard at least one bottle a day. The tracks charted would be more valuable if the numbers of the drifts were given at start and finish, and if month and year were noted along the track.

IN the *Times* of August 15 there is an account of an excursion to the forests of Belgium under the guidance of M. H. Vendelmans, an expert in land reclamation. The historic forest of Soignes has not been seriously injured by the Germans, who were induced by M. Crahay, Director of Forests, to accept double the normal output, about 650,000 cubic ft. of timber in all annually. Promiscuous felling was thus avoided, and the forest retains its former aspect, to all appearances unimpaired. During the war some valuable researches were carried out by the Belgian foresters. The ravages of the fungus (*Peridermium strobi*) which had stopped the planting of the valuable white pine have been arrested by the spraying of the seedlings. Ash seed gathered early and sown immediately, e.g. on August 16, has been found to germinate freely in the following season, while seed gathered in October and sown in spring does not come up until the second year. This discovery of hastening the germination of ash, hawthorn, etc., which "lie over" ordinarily for a season, is not new, but has seldom been acted upon, as foresters feared that early gathered seed, being immature, would produce feeble seedlings. Worthless sandy tracks in the Campine are successfully afforested after preliminary cultivation, mainly with yellow lupine, which adds humus to the soil. Japanese larch and Sitka spruce have proved very successful in such soil, being as valuable species in Belgium as they are in England.

THE fundamental importance of a knowledge of the properties of the refractory materials used in high-temperature furnaces has been for some time recognised by the United States Government, and the Bureau of Standards has for the last two or three years been engaged in researches on the subject. The quartz or ganister bricks used for furnace work in the States are made mainly in Pennsylvania from crushed and ground quartzite rock. About 2.5 per cent. of lime is added, and the mixture moulded in steel moulds, dried and burnt in kilns at 2500°–3000° F. The best procedure to be followed in these processes, and the effects of variations of the procedure, are discussed in Technologic Paper No. 116 of the Bureau by Mr. D. W. Ross, and the effects of repeated burnings on the constitution and microstructure of the bricks by Messrs. H. Insley and A. A. Klein in No. 124. It appears that the quartz is converted on heating into cristobalite and tridymite, which are both of lower density. Unless this conversion is completed during the original burning, the resulting brick will expand on further heating, with serious results to the structures of which they form a part.

THE June issue of the Proceedings of the National Academy of Sciences of the United States contains a paper on the temperature of the human skin by Messrs. F. G. Benedict and W. R. Miles and Miss A. Johnson which throws a considerable amount of light on the conduction of heat from the interior of the human body to the skin. One of the most instructive of the observations made is that of the temperature of different points on the skin of a nude person exposed for 2½ hours to a temperature of 14.6° C. While the internal temperature remained 36.7° C., the temperature of the skin became high up on the chest 29.5°, at the nipple 22°, at the waist 30°, groin 24°, knee 22°, ankle 21°, shoulder 29°, and buttock 21°. A person clothed in the usual way has skin temperatures which differ from each other by 5° C. only, the chest and waist being hottest (34° C.), the buttock and calf coldest (29° C.). The skin temperatures were taken by means of a copper constantan

couple in series with a string galvanometer giving a photographic record as the junction was moved slowly over the skin.

MESSRS. ILFORD, LTD., have recently introduced what they call "photographic vision" (or P.V.) colour-filters for use in connection with their various plates. Each transmits just that light to which the plate that it matches is sensitive, so that by looking at any object through either of them the colours of the object will appear of the same relative tone-values as they will be represented if photographed by the plate with which the filter corresponds. The improvement that will be effected by the use of colour-sensitive or panchromatic plates can thus be easily investigated. By adding to the "P.V." filter any colour-filter available for use in conjunction with the plate, the effect of photographing on the given plate and using the given colour-filter is seen at once, so that by trying one after another it is possible to find the colour-filter as well as the plate that will best give the desired result. The convenience of such a method of selecting plates and colour-filters is obvious, especially, perhaps, with artificially coloured objects, such as pictures and stained sections in photomicrography, though this method of trial must be of advantage in all photography except where pure black-and-white is concerned. An account of these with "micro-filters," other colour-filters, and the nature and use of their colour-sensitised, and especially panchromatic, plates will be found in a pamphlet entitled "Panchromatism" that has just been issued by Messrs. Ilford, Ltd. The pamphlet is illustrated with many examples that show the advantages of panchromatic plates in scientific, commercial, and pictorial photography, and gives technical details as to exposure and development that will very much facilitate the use of them and of the colour-filters.

A RECENT issue of the *Organiser* contains a special section dealing with industrial lighting. An article by Mr. Leon Gaster summarises the advantages of good illumination from the point of view of health, freedom from accidents, and efficiency of work, and quotations are made from the report of the Departmental Committee on Lighting in Factories and Workshops in order to indicate the main principles to be complied with. Artificial lighting is also dealt with in an article by Mr. H. C. Wheat on the lighting of machine-shops. The author attaches importance to the use of gas-filled lamps on the overhead system of lighting, and some effective illustrations of this method are shown. The modern tendency is strongly towards general lighting of this type, which leaves the room clear, enables lights to be well out of the range of vision, and permits rearrangement of machinery without the necessity of disturbing the lighting system. Mr. E. G. W. Souster deals with natural lighting in factories. It is not too much to say that the shape of a modern factory is determined mainly by access of daylight. Expenditure in this direction is fully justified, both by its direct influence on work and by the fact of its enabling an economy to be made in the use of artificial light.

MESSRS. H. K. LEWIS AND CO., LTD., 136 Gower Street, W.C.1, have sent us their July list of additions to their medical and scientific library during the months April–June. The catalogue is one that should be of interest and service to all readers of *NATURE* desirous of keeping abreast of scientific literature, giving, as it does, particulars of all important books dealing with the sciences published recently in this country and the United States. The list will be sent free to any address upon application.